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TRANSMITTAL LETTER (General - Patent Pending)	Docket No. 121027-014

In Re Application Of: **Toshio KOBAYASHI et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/220,223	December 23, 1998	Elizabeth Cole	55684	1771	3786

Title:

NONWOVEN FABRIC AND METHOD OF MAKING THE SAME

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Reply Brief (one original and two copies)

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit:	1771
Attorney Docket No.:	SCH0029-02
Applicant:	Toshio KOBAYASHI et al.
Invention:	NONWOVEN FABRIC AND METHOD OF MAKING THE SAME
Serial No:	09/220,223
Filed:	December 23, 1998
Examiner:	Elizabeth Cole

Certificate Under 37 CFR 1.8(a)

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on July 19, 2004

Michael S. Gzybowski

Michael S. Gzybowski

REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the Examiner's Answer mailed May 18, 2004 in connection with the above-identified application, appellants submit the following:

NEW ISSUES RAISED BY THE EXAMINER

1. On page 4 of the Examiner's Answer, in response to appellants' position that the specification describes the invention in a manner that excludes fusing the thermoplastic fibers the Examiner states that:

Appellant points to those portions of the specification which indicate that while the term 'embossing' is used throughout the specification, the process to which this refers is not a heat embossing process but rather a hydroentangling process.

The Examiner goes on to concede that:

> ...the specification does describe a hydroentangling process to provide the protuberances.

However, the Examiner maintains her position that:

> ...the specification is silent as to whether or not the thermoplastic fibers are fused.

2. On pages 5-6 of the Examiner's Answer the Examiner states that:

> Radwanski further discloses that the same types of coform materials disclosed in Anderson as the starting materials for the Anderson nonwoven fabric can also be used in the Radwanski process.

RESPONSE TO NEW ISSUES RAISED BY THE EXAMINER

1. The Examiner cannot take the position that appellants' specification teaches hydroentangling to rearrange and orient the fibers so that they form the protuberances shown in Fig. 2, and at the same time take the position that the specification does not teach that the fibers are non-fused.

The Examiner's own admission and reliance upon Radwanski et al. on page 5 of the Examiner's Answer as teaching:

> ...the use of hydraulic entangling techniques rather than other bonding methods such as thermal....bonding...(underlying added)

contradicts the Examiner's position.

Clearly Radwanski et al. teaches that if one skilled in the art were interested in avoiding the use of thermal bonding of fibers in a web as a means of maintaining the integrity of the web, one would use hydroentangling.

This teaching of Radwanski et al. supports Appellants' position that their description in the specification of using the water jets to rearrange and orient the fibers to form the protuberances excludes thermal bonding of the fibers so that the fibers are non-fused as claimed.

2. On pages 5-6 of the Examiner's Answer the Examiner states that:

> Radwanski further discloses that the same types of coform materials disclosed in Anderson as the starting materials for the Anderson nonwoven fabric can also be used in the Radwanski process.

When making the above statement, the Examiner specifically refers to Radwanski et al. at column 8, lines 29-55 and at column 11, lines 38-43.

At column 8, lines 29-55 Radwanski et al. states:

> By a coform of meltblown fibers and fibrous material, we mean an admixture (e.g., codeposited admixture) of meltblown fibers and the fibrous material. Desirably, the fibrous material is intermingled with the meltblown fibers just after extruding the material of the meltblown fibers through the meltblowing die, as discussed in U.S. Pat. No. 4,100,324, previously incorporated herein by reference. Where the admixture includes pulp fibers and/or staple fibers and/or continuous filaments in addition to meltblown fibers, with or without particulate material, the admixture may contain 1% to 99% by weight meltblown fibers. Of course, where the fibrous material is meltblown fibers, the admixture may be 100% meltblown fibers. By codepositing the meltblown fibers and the fibrous material in this manner, a substantially homogeneous admixture is deposited to be subjected to the hydraulic entanglement. Various other techniques can be utilized to provide the coform. For example, fibers can be dry laid or wet laid (by conventional techniques) into a web of meltblown fibers, in order to form the admixture. As a specific embodiment, a meltblown web can be stretched, with fibers being wet laid into the stretched web to form the

> admixture. Generally, mixtures of meltblown fibers and fibrous material, which after hydraulic entanglement form an elastic material, can be used as the coforms (admixtures) for purposes of the present invention. (underlying added)

At column 11, lines 38-43 Radwanski et al. states:

> Various pulp and staple fibers which can be codeposited with the meltblown elastomeric fibers, to provide the coform which is subjected to hydraulic entangling, are described in U.S. Pat. No. 4,100324 to Anderson, et al., which previously has been incorporated herein by reference. (underlining added)

The first cited portion of Radwanski et al. merely cites Anderson et al. as an example of a process for codepositing a meltblown material and a fibrous material. The latter cited portion refers to Anderson et al. as providing examples of "various pulp and staple fibers."

At column 5, lines 25-32 Radwanski et al. teaches that that:

> ...the mixture subjected to hydraulic entanglement is constituted by (1) meltblown elastic fibers (e.g., meltblown fibers of a thermoplastic elastomeric material), and (2) fibrous material (e.g., at least one of pulp fibers, staple fibers, meltblown fibers and continuous filaments). (underlining added)

As can be seen, at column 11, lines 38-43 of Radwanski et al. (cited by the Examiner), Radwanski et al. only refers to Anderson et al. as teaching suitable pulp and staple fibers, not as teachings the "same types of coform materials." This statement made by the Examiner suggests that Radwanski et al. utilizes the very same composition as Anderson et al. However, such a teaching if not actually found in Radwanski et al.

It is important to realize that Radwanski et al.: (1) is directed to an elastic coform; and (2) specifically distinguishes over Anderson et al. in terms of properties of the resulting nonwoven fibrous elastomeric web.

In order to form an elastic coform, Radwanski et al. requires that the first component of the codeposited composition be elastic fibers.

A review of Anderson et al. will reveal that Anderson et al. is not specifically concerned with providing an elastic nonwoven fabric.

Radwanski et al. teaches that the terms "elastic" and "elastomeric" mean any material which, upon application of a force, is stretched to a stretched length which it at least about 110% of its relaxed length.

In the examples of Anderson et al. the machine stretch and cross stretch measurements are much less than 110%.

Anderson et al. codeposits polymeric microfibers in a first gas stream that intersects a second gas stream that includes individualized wood pulp fibers. The merging of the streams causes the "microfibers [to] twist around and entangle the relatively short, thick and stiff pulp fibers as soon as the two fiber streams merge." (See column 5, lines 30-32).

A taught by Anderson et al. at column 5, lines 47-51:

> The microfibers and the nature of their anchorage to the wood pulp fibers provide yielding 'hinges' between the fibers in the final structure. The fibers are not rigidly bonded to each other, and their connection points permit fiber rotation, twisting and bending.

After the codeposition of the microfibers and wood pulp fibers, Anderson et al. pass the fibrous mat or web into the nip of a pair of vacuum rolls to form a self-supporting fibrous web as discussed at column 6, lines 29-42.

In contrast to Anderson et al., Radwanski et al. forms an elastomeric web by codepositing elastic fibers and pulp fibers and/or staple fibers and/or meltblown fibers and/or continuous filaments and thereafter hydraulically entangling the codeposited fibers.

Radwanski et al. requires that the fibers be "free" prior to the hydraulically entanglement.

As taught by Radwanski et al. at column 10, lines 1-29:

> It is preferred that conventional meltblowing techniques be modified, as set forth below, in providing the most advantageous elastic meltblown coform webs to be hydraulically entangled. As indicated previously, fiber mobility is highly important to the hydraulic entangling process. For example, not only do the "wrapper" fibers have to be flexible and mobile, but in many instances the base fibers (around which the other fibers are wrapped) also need to move freely. However, an inherent property of elastic meltblowns is agglomeration of the fibers; that is, the fibers tend to stick together or bundle as a result of their tackiness. Accordingly, it is preferred, in forming the meltblown web, to <u>take steps to limit the fiber-to-fiber bonding of the meltblown web prior to hydraulic entanglement</u>. Techniques for reducing the degree of fiber-to-fiber bonding include increasing the forming distance (the distance between the die and the collecting surface), reducing the primary air pressure or temperature, reducing the forming (under wire) vacuum and introducing a rapid quench agent such as water to the stream of meltblown fibers between the die and collecting surface (such introduction of a rapid quench agent is described in U.S. Pat. No. 3,959,421 to Weber, et al., the contents of which have previously been incorporated herein by reference). A combination of these techniques allows formation of the most advantageous meltblown web for hydraulic entangling, with sufficient fiber mobility and reduced fiber bundle size. (underlining added)

Radwanski et al.'s requirements of taking steps to be taken to reduce fiber-to-fiber bonding and provide free base fibers is in <u>contrast</u> to Anderson et al.'s teaching that the microfibers twist around and entangle the wood pulp fibers.

At column 5, lines 38-43 Anderson et al. teach that:

> The entangled pulp fibers are free to change their orientation when the matrix is subject to various types of distorting forces, but the elasticity and resiliency of the microfiber network tends to return the pulp fibers to their original positions when the distorting forces are removed.

From this disclosure it can be inferred that the pulp fibers in Anderson et al. are sufficiently entangled (i.e., not "free") so that when subject to distortion (hydroentanglment?) the microfiber network tends to return the pulp fibers to their original positions.

It is noted that the in combining the teachings of Anderson et al. and Radwanski et al. in the final rejection the Examiner took the position that:

> It would have been obvious...to have formed the embossed pattern [of Anderson et al.] by hydroentangling the fabric [per Radwanski et al.].

Radwanski et al. does not teach or mention embossing.

Accordingly, Radwanski et al. cannot be relied upon as teachings forming the embossed pattern of Anderson et al. using hydroentangling. The prior art does not teach any equivalents between embossing and hydroentangling and the Examiner cannot rely upon appellants' own disclosure for such a teaching.

It is noted that at column 14, lines 4-10 Radwanski et al. teaches that the hydraulic entangling technique involves the use of a support which can be a mesh screen or forming wires or apertured plates and that the support can be patterned.

However, Radwanski et al. does not teach forming an embossed structure or a plurality of protrusions in the nonwoven material, much less the specific structure of the embossed pattern of Anderson et al. which requires flat calendered areas 43.

Radwanski et al. does teach a bonding station 38 at which a padder is provided to press the nonwoven web. Otherwise, Radwanski et al. teaches "[o]ther optional secondary bonding treatments include thermal bonding, ultrasonic bonding, adhesive bonding etc." (column 14, lines 55-57).

No embossing is taught as being achieved at the bonding station 38 in Radwanski et al`.

Moreover, it is noted that Radwanski et al's use of a padder would result in a flattened nonwoven fabric rather than one having protrusions.

CONCLUSION

For the reasons advanced above and those set forth in appellants' Brief on Appeal, appellants contend that the rejection of claims 3 and 6-12 as failing to meet the requirements of 35 U.S.C. §112, first paragraph is unfounded because appellants' specification provides an enabling disclosure for the claimed subject matter.

Moreover for the reasons advanced above and those set forth in appellants' Brief on Appeal, appellants contend that the rejection of claims 3 and 6-12 as being obvious under 35 U.S.C. §103(a) over Anderson et al. in view of Radwanski et al. is improper because the Examiner has not met her burden of establishing a *prima facie* case of obviousness.

Reversal of each of the rejections on appeal is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of

time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,

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